**United States
Department of
Agriculture**

Build Upon Success

Reform 1 Report
USDA Reform '88 Program

AGENCIES

DEPARTMENTAL
NETWORK

COOPERATIVE
PROCESSING
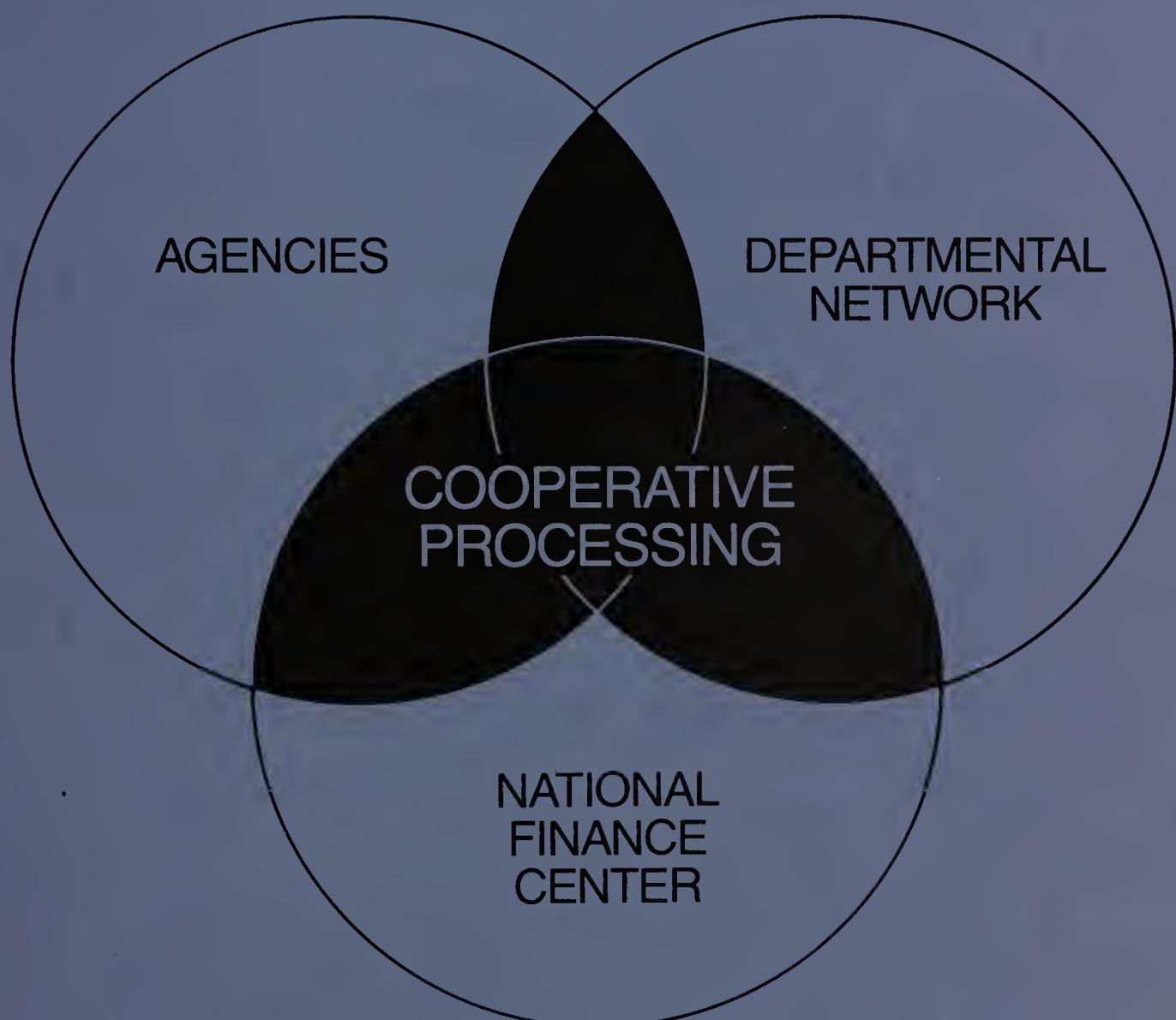
NATIONAL
FINANCE
CENTER

FOREWORD

In March 1983, Secretary John Block identified ten basic management reform initiatives to achieve the objectives of the Reform '88 Program. The first of these ten reforms required a reexamination of Department of Agriculture administrative systems to find better, less expensive ways of supporting USDA programs. This report, the result of that reexamination, was provided March 30, 1984.

The report was carefully reviewed in an intensive three day meeting by the USDA Ad Hoc Committee on Reform '88 initiatives. On April 19, 1984 the Committee strongly endorsed the report, but suggested some adjustments to the recommendations. The report and the Ad Hoc Committee's recommendations were circulated to all USDA Agencies for comment.

After reviewing the agency comments, the Ad Hoc Committee recommended that I accept the report as modified and direct its distribution. In response to this recommendation, I approve the Reform #1 Report as modified by the April 1984 memorandum from the Ad Hoc Committee.
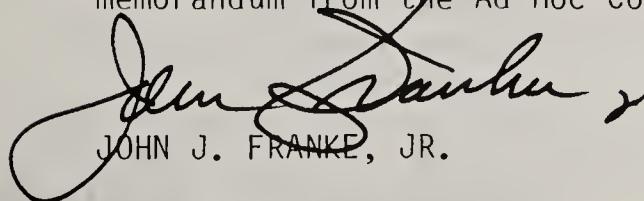
JOHN J. FRANKE, JR.

Assistant Secretary

for Administration

1

United States
Department of
Agriculture

Office of
the Secretary

Office of
Finance and
Management

Washington, D.C.
20250

SUBJECT: Cooperative Processing

JUL 2   1984

TO: John J. Franke, Jr.
     Assistant Secretary for
     Administration

On behalf of the Agencies and Staff Offices that we represent, the members of the Ad Hoc Committee on Reform '88 Initiatives wish to reaffirm our unanimous support for the concept of Cooperative Processing as developed by the Reform 1 Project Team.

We recommend that the Department proceed with implementation of this concept with the understanding that the National Finance Center will continue to provide its current level of support to all Agencies and Staff Offices until those organizations choose to convert to Cooperative Processing.

We urge you to accept the Reform 1 Report, as modified by the Ad Hoc Committee's memorandum of April 19, 1984, and to direct the Office of Management Reform to publish and distribute the Reform 1 Report as a final product. Further, we believe that a Secretary's Memo should be issued establishing Cooperative Processing as a long-range policy goal of the Department.
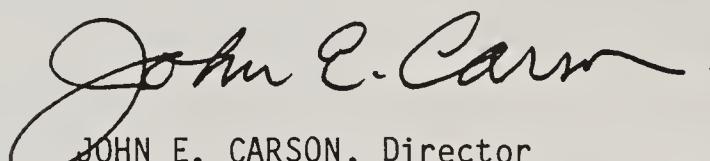
JOHN E. CARSON, Director
Office of Finance and Management
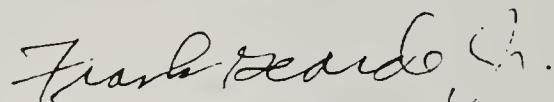
FRANK GEARDE, JR., Director
Office of Operations
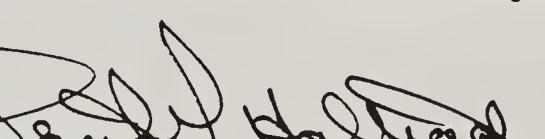
ROBERT G. HALSTEAD, Director
Office of Management Reform
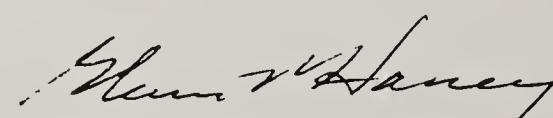
GLENN P. HANEY, Director
Office of Information Resources
  Management
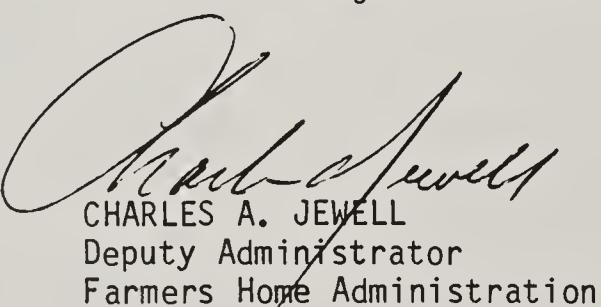
CHARLES A. JEWELL
Deputy Administrator
Farmers Home Administration

JEROME A. MILES
Deputy Chief
Forest Service

WILLIAM J. RILEY, Jr., Director
Office of Personnel
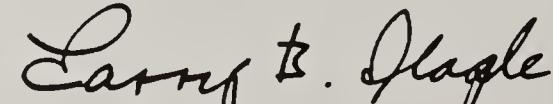
LARRY B. SLAGLE
Deputy Administrator for Management
Animal and Plant Health Inspection
  Service

April 19, 1984

SUBJECT: Ad Hoc Committee Views on the Final
           Report of the Reform 1 Project Team

    TO: John J. Franke, Jr.
           Assistant Secretary for
             Administration

The Ad Hoc Committee on Reform '88 Initiatives has completed an in-depth review of the final report issued by the Reform 1 Project Team on March 30, 1984. Our comments on the report are in six major categories:

1. QUALITY OF THE REFORM 1 REPORT

The Committee strongly agrees with your recent comment that the Reform 1 project has been carried out in an exemplary manner. The Project Team has been able to go far beyond "turf" battles and the personal or organizational interests of the individuals involved, to produce a report that genuinely represents the best interests of the entire Department.

2. SUPPORT FOR COOPERATIVE PROCESSING

The Committee also wants to go on record with a unanimous endorsement of the concept of Cooperative Processing and the generic systems architecture presented in the Reform 1 report. These concepts bring together the best aspects of large "main frame" processing systems and the distributed data processing resources being developed by individual agencies. Within the framework outlined in the Reform 1 report, the Department can work toward a unified administrative management system that takes advantage of economies of scale in common processing operations while giving managers at all levels the flexibility to deal with their own information.

It should be pointed out that Cooperative Processing represents a very positive departure from the way administrative transactions are currently handled. Cooperative Processing recognizes the data processing and transmission capabilities that are emerging throughout the Department; it meshes well with the composition of the Department and the missions and information requirements of USDA agencies.

3. PRIORITY SETTING

The Committee strongly believes that coherent, comprehensive priority setting processes need to be established to guide the implementation of Reform 1 and the other management initiatives in which the Department is involved.

A. Priority Setting Within Reform 1

The Ad Hoc Committee endorses the formation of a Reform 1
Implementation Staff, and recommends that this group develop a priority
setting process for the projects and tasks to be carried out under
Reform 1. Priority setting criteria should be developed around such
factors as: cost effectiveness, the degree to which projects meet
agencies' needs, the degree to which projects support Departmental or
Government-wide management improvement goals, and resource
requirements.

B. Setting Priorities for All Management Improvement Projects

The Department is dealing with a very large slate of management
improvement initiatives including:

-- The Ten USDA Reform '88 Projects,

-- Grace Commission Recommendations,

-- OMB Reform '88 Initiatives and Management Review Decisions,
    several of which have heavy resource requirements (e.g., A-76
    Reviews, Internal Control Reviews, Consolidation of Management
    Support),

-- The desire of several other Departments to have the National
    Finance Center provide administrative support for them.

As staff and budgetary resources decline, USDA agencies and staff
offices are not able to handle all of these initiatives at once. The
Ad Hoc Committee recommends that the Assistant Secretary for
Administration work with the Administration Committee to develop a
mechanism for dealing with the competing demands for management
resources Department-wide.

4. RESOURCE REQUIREMENTS

The Ad Hoc Committee recognizes that funding for development of
administrative management systems will continue to be a sensitive issue,
and that some investment may be required to implement Reform 1. The
Committee recommends that the Reform 1 Implementation Staff work closely
with the Assistant Secretary for Administration and the Director of the
Office of Budget and Program Analysis to develop a coherent, positive, and
aggressive Reform 1 Resource Package. This document should provide a basis
for integrating Reform 1 planning, funding, and review activities into the
Department's program development and approval process. The package should
demonstrate that successful implementation of Reform 1 will improve program
management and stretch program resources.

5. <u>AD HOC COMMITTEE REACTION TO MAJOR REFORM 1 RECOMMENDATIONS</u>

The Ad Hoc Committee is in general agreement with most of the major recommendations made by the Reform 1 Project Team. A few specific areas in which the Committee disagrees with the Reform 1 report are discussed in the Attachment.

6. <u>SPECIFIC PROJECT PROPOSALS</u>

The Reform 1 Project Team has proposed a number of specific projects, without a specific recommendation on how these projects should be staffed and carried out. The Ad Hoc Committee agrees that the proposed projects are worthwhile, and recommends that they be referred to the appropriate staff office for review, analysis, and action, as appropriate.

In summary, the Ad Hoc Committee is in substantial agreement with the Reform 1 Project Team on the future direction of the Department's administrative systems. The Project Team should be commended for a job well done.
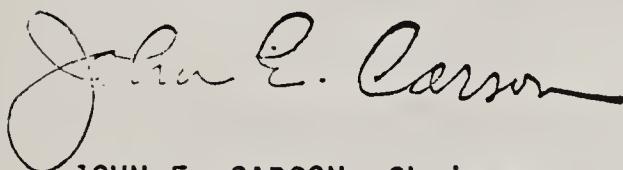
JOHN E. CARSON, Chairman
Ad Hoc Committee on
  Reform '88 Initiatives

Attachment

AD HOC COMMITTEE COMMENTS ON SPECIFIC REFORM 1 RECOMMENDATIONS

A. Policy Recommendations:

   8. Recommendation Number 8 should be limited to the following statement:

      "Emphasize the role of appropriate staff offices in the Department to establish and promulgate policy on administrative systems."

   10. Regarding Recommendation Number 10, the Ad Hoc Committee believes that it is premature for any decisions to be made on the personnel systems now under evaluation. It is recommended that the results of the evaluation be presented to the Ad Hoc Committee for information, to the Departmental Systems Review Board for systems evaluation and a recommendation to the Assistant Secretary for Administration, and to the Working Capital Fund Inter-Agency Advisory Board for a recommendation to the Assistant Secretary with respect to the financial implications.

   14. Recommendation Number 14 should be added as follows:

      "Manage the 4 Departmental computer centers' resources to provide for networking and sharing of workloads."

      This new recommendation should replace item Number 1 (Recommendation B-1) under Organizational Recommendations, and item number 5 (Recommendation C-5) under Recommendations on Roles and Responsibilities.

B. Organizational Recommendations:

   1. The Ad Hoc Committee is not ready to recommend the formation of an Information Processing Administration at this time, and believes that this recommendation should be rejected. (See A-14, above.)

   2. The Ad Hoc Committee agrees that a dedicated Reform 1 implementation staff should be formed, but believes that specific suggestions on the size and duration of the staff should be deleted. Accordingly, this recommendation should be reworded as follows:

      "Establish a temporary Reform 1 implementation staff reporting to the Assistant Secretary for Administration. This staff will develop, with the Ad Hoc Committee, an implementation strategy for approved Reform 1 activities.

C. Recommendations on Roles and Responsibilities:

   5. The Ad Hoc Committee believes that this recommendation should be rejected. (See A-14 and B-1, above.)

D. (Not Used.)

E. Technical Policy Recommendations:

   2. The Ad Hoc Committee agrees conceptually with Recommendation Number 2, but believes it should be worded as follows:

      "Distribute to agencies and Departmental staff offices appropriate documents (i.e., RFPs, long-range IRM plans, etc.) for exchange of information on hardware and software acquisitions, to enhance coordination."

   3. The Ad Hoc Committee believes the following sentence should be added to Recommendation Number 3:

      "Refer the issue to OMB and GSA for Government-wide consideration."

F. Recommendations on Major Projects:

   1. Regarding Recommendation Number 1, the Ad Hoc Committee does not agree that a task force is needed to deal with barriers to "paperless processing." However, the Committee agrees that the subject needs attention, and believes this recommendation should be stated as follows:

      "Under the coordination of the Office of Information Resources Management, Departmental Staff Officers should find ways to eliminate barriers (particularly those identified by the Reform 1 Project Team) to paperless processing of administrative transactions."

   2. The Ad Hoc Committee agrees that a CSRA demonstration project is warranted, but that the recommendation should be worded more simply, as follows:

      "Develop a demonstration project proposal on personnel management at the NFC."

United States	Office of	Office of	Washington, D.C.
Department of	the Secretary	Finance and	20250
Agriculture		Management	

March 30, 1984

MEMORANDUM TO: Ad Hoc Committee on
                 Reform '88 Initiatives

I am pleased to provide the final report of the
Reform One project. As you know, copies of the
reports of the Personnel, Administrative Services,
and Financial Management Teams have been circulated
to USDA Agencies and Staff Offices. This report
provides the overall recommendations with special
emphasis on Cooperative Processing, the
architecture recommended for USDA administrative
systems.

Thank you for your cooperation in this effort. I
appreciated the professionalism and competence
demonstrated by the Committee and the many USDA
employees who participated in this program. I look
forward to discussing the recommendations with you
and have confidence that the implementation of
recommendations you support will help USDA remain
a leader in administrative processes.

JOHN P. KRATZKE
Project Director
USDA Reform One Project

Attachment

Reform 1 Report

Executive Summary

The Reform #1 report represents the work of more than 150 assigned people guided by the comments of more than 2,000 other USDA personnel. Twenty-five overall recommendations are provided in the report. More than 60 additional recommendations are made in reports of the Financial, Administrative Services, and Personnel System Teams.

Capacity and cost of technology changed radically in the last decade. We are no longer limited in choice by million-dollar investments in computer mainframes. There are ways to automate without using high-priced technical specialists. USDA made the logical decision to centralize administrative systems in 1973. Reform #1 recommends building upon the success resulting from that decision by instituting COOPERATIVE PROCESSING.

COOPERATIVE PROCESSING, as portrayed in the attached chart, will take advantage of today's technology by using:

● Central processing for truly common administrative functions.

● Local processing and data bases for unique processes and local needs.

● Electronic creation and transmission of all transactions.

● DEPNET, the USDA telecommunications network, to link central and local operations.

COOPERATIVE PROCESSING will provide a basis for solution of the major problems with present operations expressed by USDA agencies: access, control, accuracy, timeliness, and paper volume.

Key actions required to institute COOPERATIVE PROCESSING are:

● Recast Secretary's Memorandum 1776.

● Develop data management skills and programs in Departmental staff offices and agencies.

● Develop and implement programs to enhance people skills and change mind-sets.

● Create a temporary organization to direct and monitor implementation of approved Reform #1 recommendations.

Agency computer

Local Data Bases

Decision Support Systems

Data Manipulation

Funds Control

DEPNET

X-25 Protocol

Nationwide Data Communications Network

Data Transmission

3270/2780 Protocols

COOPERATIVE PROCESSING

Departmental Data Control
Common Administrative Process
Departmental Reports
External Reports
General Ledger

NFC

Fort Collins

Kansas City

Cooperative Processing

New Orleans

USDA HQS Washington

Introduction

Traditional designs of automated systems were driven by the following realities:

- Million-dollar Mainframes

- Very expensive storage costs

- Specialized programming skills scarce and expensive

- Attempts to integrate all processes into "The Management Information System"

Given this reality, the most reasonable system design was one that eliminated duplication by centralizing hardware, software, and the talent to create and operate the system. The NFC is a classic example of this *efficient* response.

But reality has been modified. The technology of the 1980's has brought us:

- Inexpensive computing power[1]

- Virtually free storage[1]

- Reduced reliance on specialized programming

- Data Base Management Software

- Growing libraries of "off-the-shelf" software

- Mature communication technology

- No proven management model[2]

- Growing end-user computer literacy and information demands

Reform #1 of the USDA Reform '88 Program reexamined USDA administrative systems. This report gives the results of that review in terms of the present and projected environment.

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[1]National Executive Forum, National Academy of Sciences, November, 1983.

[2]5 Year Plan, NBS, GSA, OMB, published April 1983, entitled "Meeting the Automatic Data Processing and Telecommunications Needs of the Federal Government."

II. Methodology

A. Functional Teams

Three project teams were established to conduct reviews of all administrative systems:

- Administrative Services, led by Leonard Covello
- Financial Systems, led by Peter Ben Ezra
- Personnel Systems, led by George Robertson

A support team, to address information resources management and ADP issues was established in December 1983. It is led by Ira Cebulash.

Under the general direction of the project leader, John Kratzke, the project teams conducted independent examinations. Although these efforts were conducted separately, each team was required to:

1. Maximize user involvement and

2. Balance end-user needs and Department needs.

B. Involvement

"Get comments and suggestions from anyone who offers them. Listen to the line-managers, the staff officers, and those who do the administrative work." These instructions to the Reform #1 team members reflected the Department's commitment to a "bottom up" principle in Reform '88 initiatives. Involvement was an objective of the Reform #1 team, recognizing that people, not technology, really make the systems work.

More than 2,000 USDA people participated in the Reform #1 review. Over 150 people served as members of task forces or teams. Others attended meetings and teleconferences, provided written comments, and participated in informal discussions. The Financial Council and Administrative Services Council each held three day meetings dedicated to defining how their future systems should work.

C. Balance End-User and Department Needs

"Treat the agencies and Department as partners. Make sure all valid needs are heard." These instructions emphasized that both the Department and the agencies have needs. Many end-users have to be satisfied— managers, staff offices, central guidance agencies, and the like. The Reform #1 teams were asked to find the balance among these needs.

III. Scope

The Reform #1 charge was to reexamine Department-wide automated management systems such as those handling payroll, personnel, and property to develop simpler and cheaper processing methods. Our review did not include program systems.

We divided all administrative systems into three parts:

1. common processes,

2. Agency unique process, and

3. management information.

These distinctions are very important, and the reform #1 teams considered each part.

A. Common Administrative Processes

The Reform #1 team defined the common administrative processes as:

- Activities defined by statute or regulations which cannot be changed. For example, what an individual can be paid on Government travel is predetermined by statute and GAO rulings.

- Directed information reporting. For example, providing information to the Central Personnel Data File is not optional. Data elements are defined and mandated by OPM.

- Processes driven by core data which are identical in all locations. Hours worked is defined in the same way at every Government agency. This element drives the calculation of pay.

- Processes initiated as a result of a previous decision. The decision on how to fill a vacancy is unique to an organization. After hiring, the payroll and central information processing are part of the common processes.

Common processes are subject to the economies of scale. We can and should develop automated support systems in one (or a few) places. The payroll system is changed frequently. Pay raises, tax changes, and changes in insurance costs are made outside USDA. Each of these changes requires programming to adjust the system. It is cheaper to make these changes once, rather than in many different places.

Based upon these definitions, common administrative processes include:

- Payroll
- Departmental Personnel Processing
- Administrative Payments
- Small Purchase and FEDSTRIP
- Billings and Collections
- Central Reporting and
- Maintenance of Departmental General Ledger.

B. Unique Administrative Processes

Every administrative process involves a resource. In personnel processes, an agency is either hiring a new resource, changing the status of an existing resource, or releasing an existing resource. Procurement is similar. We are either acquiring a new piece of property or service, transferring it, or excessing it. The decision portions of the process belong to the agencies. Agency organization and delegations prescribe where that decision should be made. Each decision has an impact on the total resources available to an organization. Decisionmakers need knowledge of total resources (funds, positions, space, etc.) available.

Systems to support these unique portions of administrative processes differ in the agencies. Some are manual, including the maintenance of informal station ledgers which list each obligation against each account. Others have automated this activity. The sharing of agency-developed administrative support systems is being encouraged by publishing and circulating an inventory. The Department is also developing an automated Federal Information Locator System.

Unique administrative processes are not subject to economies of scale. There are no cost advantages in central development of procedures or programs for a unique process. Most USDA agencies have or will have local processing capability. Central production and development organizations are overwhelmed with requests and demands for service. The agency with a unique requirement loses control of priority.

C. Management Information Needs

All levels of USDA require management information. Agency and field needs are primarily for decision support and require "current" information. "Should I fill that vacant position?" "Can I afford overtime to solve this problem?" "Can I spend money on a contract?" The decisionmaker must know what resources have been spent and what resources are committed. The Department's management information needs tend to be historical. Information is required to support reviews of policy effectiveness and agency compliance with policy. USDA reports to external agencies are also the responsibility of the Department.

Decision support information requires "current information" and should be available locally. Historical information needs can generally be met from the central operation.

IV. Findings

A. Current Status

USDA is ahead of most Government Departments in effective processing of common administrative systems. In 1961 the Department began the development and implementation of automated payroll/personnel system covering all employees within the USDA. Since then it expanded its centralized, common administrative systems to cover all billings received by the Department. It developed and implemented a central accounting system for common administrative accounting which now supports most of the Departmental agencies. From a processing viewpoint these systems work well.

USDA is in a unique position to take advantage of new technological opportunities. The Department has centralized administrative systems with standardized definitions of the data elements. It has already accomplished a high priority objective of the Administration Reform '88 Program - consolidate personnel and payroll systems and reduce staffing.

1. Department of Agriculture

Many efforts are underway within the Department to improve administrative operations. Some are continuations of past efforts which were combined with new initiatives under the umbrella of the Reform '88 effort within USDA.

- Technical and automation issues are being addressed. The Department has instituted the DEPNET Program which provides for Departmentwide usage of a value-added communications network provided by GTE Telenet. Much progress has been made in improving the USDA long-range information resource management planning process. Tests of both the Air Force and the NFC personnel systems have been instituted under the aegis of the Department to help define how best to improve the personnel process and the related management information availability.

- The Office of Budget and Program Analysis (OBPA) is developing automated budget capabilties which will be able to receive information from agencies in electronic form. Under Reform #2, the Department has established a Systems Review Board, which will coordinage the development and operation of administrative systems within the Department.

- Administration priorities are being pursued. Debt reduction and cash management continue to be high priorities. Recognition of budget pressures has led to a strong orientation toward the reduction in administrative support costs. Commitment and determination to improve administrative processes is high.

- Changes are anticipated to arise from the USDA Reform '88 Program. The Office of Finance and Management has been assigned as the focal point for providing Departmental direction to the National Finance Center. This is an interim arrangement pending outcome of the report on Reform #1 and its subsequent review. Overall, the Department has provided limited guidance to the National Finance Center regarding its priorities and future development activities. The Center is to be commended for filling the vacuum by developing its own plan.

In summary, USDA is addressing the need to change to take advantage of the "Information Age" both technically and organizationally. It is actively pursuing Reform '88 management improvement goals and is anxious to remain the recognized Government leader in administrative processing.

2. The National Finance Center

The National Finance Center was established in 1973, with the specific charter to develop and implement a centralized USDA-wide accounting system. Its operations incorporated the successful previous implementation of centralized payroll and payment operations. The NFC has a proven production record in the processing of administrative transactions, and has saved the Department substantial resources. In 1983, a new USDA payroll/personnel system was implemented, which used data base software technology as its foundation. The NFC is currently making payroll/personnel information directly available to selected agenicies through electronic transmission. Most of the other systems are still operating in a fundamentally batch mode, which precludes direct access.

In April of 1984, the National Finance Center expects to acquire additional processing and disk storage capability. This upgrade should increase the NFC ability to improve its common administrative processes.

3. USDA Agencies

Major automation plans exist at almost all agencies within the Department of Agriculture. Microcomputers, minicomputers and contract support already proliferate within the Department and are being used to good advantage in program support. There is a growing recognition of the potential of the multipurpose work station. The multipurpose work station means using the same

V. Conclusions

computer to provide program support. By 1987 OIRM has estimated that 10,000 computers of varying sizes will be installed within the agencies. IRM plans indicate a substantial reliance upon the availability of "off-the-shelf" software. This reliance will minimize development costs and allow productive use of the data processing equipment to begin almost upon installation.

B. Current Problems

The existing Departmentwide common administrative systems work. Agency-expressed concerns about current systems covered five major areas. These are (1) accuracy, (2) accessibility, (3) timeliness, (4) control or lack of it, and (5) paper. A further concern is "Where are the Department's administrative systems going? I want to develop plans to tie our activities to the Department's."

When the decision was made to centralize various activities within the Department, the problems of accuracy, timeliness,and controls were predictable. Nevertheless, the benefit of eliminating redundancy both in operations and in systems development justified making the centralization decision. The technology during the time when centralized systems were implemented only provided batch processing potential which, now, in light of growing expectations, has proved inadequate to the agencies. This inadequacy is validated by the existence of manual and sometimes automated "cuff" records, which are used to reconcile with NFC records. Technology has now matured to the point that we can take advantage of the inherent benefits of centralization without incurring the associated problems that existed in the past.

In summary, a solution which was valid 10 years ago is now unacceptable. The limitations imposed by hardware and software leading to exclusive centralization are no longer valid. Agencies have acquired and are beginning to use the newer technology. For this reason, agencies are forcing a reconsideration of the old solution. In effect they are asking, "Why do we have to continue to live with these limitations?"

A. No Single Solution

The missions of Department of Agriculture agencies are highly varied. They deal with land management, lending, inspection services, research, grant management, human nutrition, market analysis, international economics, and almost any other variety of activities connected with "American agriculture." These varieties of missions do not necessarily adapt themselves to a single way of doing business. Both geographical and mission responsibilities differ so much that agencies approach their missions in different fashions.

Most of the agencies within the Department have reasonably well-developed automation programs to support their basic missions. The technologies used in the various programs vary widely. They range from stand alone word processing to highly sophisticated minicomputer networks. Recent program developments within the Forest Service and the Agricultural Stabilization and Conservation Service have emphasized the growth of automation support within the agencies. Included among the many varieties of automation hardware are Wang, Data General, Sperry, Hewlett Packard, IBM, Dec, Data Point, Four Phase, and Harris. While technological compatibility is projected to be a reducing problem, this existing variance cannot be ignored in developing recommendations for solutions. The Office of Budget and Program Analysis developed information on available technology in the budget function. Exhibit V-1 demonstrates the variety.

Agency organization structures and information flows differ. Each has a management philosophy designed to meet its mission requirements. The level os skill for dealing with the new technology also varies greatly. Use of technology for administrative work is a high priority in some agencies and low priority in others. These differences dictate a flexible overall systems architecture which can meet the needs of the different agencies as they evolve.

B. New Concept of Centralization

The Department's successful centralization effort was prompted by a need to reduce costs and work within the limits of existing technology. In the same vein, it is now apparent that recent developments have cast the situation in a new light.

1. Reduced Technology Costs:

In the sixties and seventies when key decisions were made by the Department of Agriculture for its administrative systems support, we were dealing with million-

Exhibit V-1

USDA
HARDWARE/SOFTWARE CAPABILITIES
WITHIN AGENCY BUDGET OFFICES

UNITED STATES DEPARTMENT OF AGRICULTURE	Computers (MC-Micro, MN-Mini, MF-Mainframe)	Operating Systems	Print	Plot	Spread Sheet	Languages (B-Basic, C-COBOL, F-Fortran, P-Pascal)	TTY	3270	3760	X.25	SNA	Word Processors
Departmental Administration												
Office of the Secretary....................												
Departmental Administration												Lanier
Office of Budget and Program Analysis........	Convergent Technologies	UNIX,CTOS / MS-DOS / CP/M-86	Y	Y	MPLN / 20/20	B, C, P	Y	Y	Y	Y	N	Lanier
Office of Governmental and Public Affairs....												
Office of the General Counsel...............												
Office of the Inspector General.............												
Office of Economics												
Economic Research Service..................												
Statistical Reporting Service..............		MS-DOS										
Economics Management Staff	IBM-XT	CP/M	Y	Y	Lotus	B, C, F	Y	Y	N	N	Y	Wang
World Agricultural Outlook Board...........												
Food and Consumer Services												
Food and Nutrition Service	Televideo				Super-cal / Lotus	B						
Human Nutrition Information Service.........												
Marketing and Inspection Service												
Food Safety and Inspection Service.........	HP 25		Y	Y		B	Y	N	N	N	N	Lanier
Agricultural Marketing Service	TAB		Y	N			N	N	N	N	N	Lanier
Animal and Plant Health Inspection Service...	Zenith 100	MS-DOS / CP/M	Y	Y	Multi-plan	B						Four Phase
Federal Grain Inspection Service...........	IBM-XT	MS-DOS	Y	Y	Lotus	B, C	Y	Y	Y	Y	N	Lanier
Office of Transportation...................												
Agricultural Cooperative Service...........												
Packers and Stockyards Administration......												
International Affairs and Commodity Programs												
Agricultural Stabilization & Conservation Service.................	IBM PC / Wang VS	MS DOS / Wang OS	Y	N	Lotus		Y	Y	Y	N	N	Lexitron / Wang
Foreign Agricultural Service...............	IBM PC/XT	MS DOS	Y	N	Visica / Lotus	B	Y	N	N			Wang
Office of International Cooperation and Development...............	Victor	CP/M	Y	N	N	N	Y	Y	N	N	N	CPT
Small Community Rural Development												
Farmers Home Administration	Televideo		Y	N	N		Y	N	N	N	N	Lanier
Rural Electrification Administration.......	Wang VS, Dig		Y	Y	MP		Y	N	N	N	N	Wang
Office of Rural Development Policy.........												
Federal Crop Insurance Corporation........	Wang				MPLN							
Natural Resources and Environment					MPLN							
Forest Service............................	IBM	MS-DOS	Y	Y	Lotus	B,C,F,P	Y	N	N	N	N	Xerox
Soil Conservation Service (Planned for FY 84)	IBM XT or Wang	CP/M / MS-DOS	Y	Y	Lotus / Visica	B, F	Y	Y	Y	N	N	Wang
Science and Education												
Agricultural Research Service.............	Victor PC		Y	Y	Lotus	B						Lanier
Cooperative State Research Service........			N	N	N		N	N	N	N	N	Lanier
Extension Service.........................	Wang PC		N	N	N		N	N	N	N	N	Wang
National Agricultural Library.............												

Communications header note: 2780/

dollar investments in equipment and development projects. The risks were high that projects would not meet expectatios, on time, within budget. Today's environment deals with small scope systems. The investment is small.

The National Academy of Science, in a meeting in November of 1983, projected the availability of a machine capable of processing one to four million instructions per second at a purchase cost of less than $5,000. Spread sheet and data base software is presently available and is expected to improve significant in the future. Therefore, the development investment is likely to be the learning curve for a few individuals rather than the expenditure of many years of effort by full-time technical experts. This new environment permits decisions which require the technology to adapt to the organization, rather than the reverse.

2. Agency Internal Capability

Present automated capability within the agencies of USDA is high. Projections, which are quite firm, show that more than 10,000 computers will be installed in USDA by 1987. This technology was acquired for direct program support but does not exhaust equipment capacity. Because of this available capacity, improvement and enhancement of administrative operations can occur with little additional cost. One of the most difficult management tasks will be to encourage and require the use of this existing capacity as a multipurpose work station. In the past, managers as well as skilled technicians have dealt with technology as a separate entity to which they send paper. If we are to move to the paperless society the multipurpose work station must exist and be used by the managers and technicians.

3. Local Needs versus Department Needs

Departmental needs in administrative systems are driven by two factors. First, sufficient information is needed to support the centralized payment process, which has proved over the years its efficiency and effectiveness. Second, historical information is needed for reporting and review purposes so the Department may appropriately exercise its role of monitoring the administrative activities of the agencies. Conversely, local needs are for up-to-the-minute information, providing tracking systems of past and pending items, as well as the capacity to project future administrative transactions. Local activities can then manage on a day-to-day basis. The ideal administrative architecture will support both sets of needs regardless of the sophistication of an individual agency.

As stated, the Department logically sacrificed certain

capabilities to achieve the reduced costs and operating efficiencies created by centralization. Previously the choice was only between total centralization or total decentralization, and each choice carried with it a set of assets and liabilities. Now the Department has the opportunity, given the changes described, to create an environment that mixes centralization and decentralization. This opportunity is the new concept of centralization. It offers the benefits of continued efficient centralization without having to make sacrifices in capabilities. Local information for decision support and agency unique operations can be achieved without affecting the in-place centralized systems.

C. Planning Process Not Yet Perfected

The Department has aggressively pursued the development of a cohesive long-range information resources management plan. The beginning of the process occurred during 1983 with submissions by each of the agencies of their long-range plans. A Systems Review Board was established under Reform #2. Recognizing the impact of telecommunications on the future of technology, the Department has established a USDA-wide DEPNET program which will provide a single value-added network servicing the needs of the Department for telecommunications. The 1984 planning process includes placing requirements upon the staff offices to develop individual information resources management plans. This will provide an improved framework for assuring coordination between the various agencies and the Department, the overall monitor of activities. Many of the recommendations made in this report emphasize the need to continue and to perfect processes already underway. As the Federal Information Locator System is developed, further transfer of information regarding administrative systems will become viable. The information resources management planning process is on the right track and should be emphasized continuously. Availability of information regarding the Department's plans and approaches provides a framework which enables agencies to improve their plans.

Past Department policies (Secretary's Memorandum 1776 and Supplements) discouraged or prohibited agencies from developing and maintaining their own administrative systems. These policies supported a systems architecture limited to central processing alone. The changed environment offers a chance to build upon past successes by using expanded NFC and agency capabilities to resolve the problems with present systems. This calls for new, more flexible architecture and policies. To accomplish this flexibility and perfect the planning process we must revise Secretary's Memorandum 1776 and Supplements.

VI. Recommended Generic Architechure — Cooperative Processing

A. Rationale

The proposed architecture for USDA Administrative systems is designed to:

• Recognize the real world—10,000 mini and micro-cumputers in agriculture by 1987. Agencies really are different—NFC is improving its responsiveness—DEPNET is here.

• Solve the real or perceived problems of access, control, accuracy, timeliness, and too much paper.

• Be efficient and save money when we can do so without hurting our mission programs.

We should take advantage of our ability to do a lot more at many different places—NFC can now provide a lot more. Local computers can give us support. Let us use all of these capabilities in a common sense approach—COOPERATIVE PROCESSING which is the recommended architecture.

COOPERATIVE PROCESSING is the combined use of central processing and end-user computing power to provide administrative systems support. It calls for use of central processing capability for all common portions of administrative systems. It provides options, which are agency selected, for the use of central and end-user capability to meet agency unique processing or management information requirements. (See figure VI-1 for description of variations.)

How does COOPERATIVE PROCESSING work to do all these good things?

• Do the truly common processes at one place. No agency wants to or should run payroll, make travel payments, or maintain programs to produce reports used by someone else.

• Encourage "intelligent pre-processing" at the local level. Every administrative action starts at the local level—a request to buy a desk, an authorization for travel, a request to fill a position, telling payroll an employee did work 80 hours this pay period. If computer support exists where the action starts, we can type (create), transmit, and file (store information) all at the same time. We can also have the computer check to see if the entry is valid, reducing the number of errors arriving at the NFC. This type of error check is "intelligent pre-processing." It adds a new dimension to the efficiency of the Department's common administrative systems.

Intelligent pre-processing, should be the Department's long-range goal. Intelligent pre-processing equals common sense. Use available local capability to meet needs that are strictly local. Eliminate most errors at the source by pre-edits. Why send errors to the NFC for them to correct? (See figure VI-2 for illustration.)

• Support local administrative processes at the local level. Who approves buying another desk or filling a position? How can we be sure there is enough money to cover this action? When was that Time and Attendance submitted? How many people were approved for overtime this week? These questions are typical. Right now paper files are kept and added up to get answers. If we organize files when we first request or approve an action, we can answer these questions from the local computer and save a lot of paper and effort. Easy-to-use data base software lets us do that.

• Support activities without a local computer. NFC can provide information from some of its data bases and wants to provide more. NFC also wants to provide remote access for data entry in many of its systems. These two features form the basis of remote multiple access. Until computers are everywhere, we should take advantage of this. That means we support some local operations from a central point. (See figure VI-3 for illustration.)

• DEPNET is here. Negotiations and improvements will continue, but we can send action and management information to and from the National Finance Center. We can also send it to and from local computers, no matter who runs the computers. Even through local area networks may be required at some locations, we should look to DEPNET as our primary link for administrative communication.

Figure VI–1

Cooperative Processing—variations

Figure VI–1. Cooperative Processing—variations
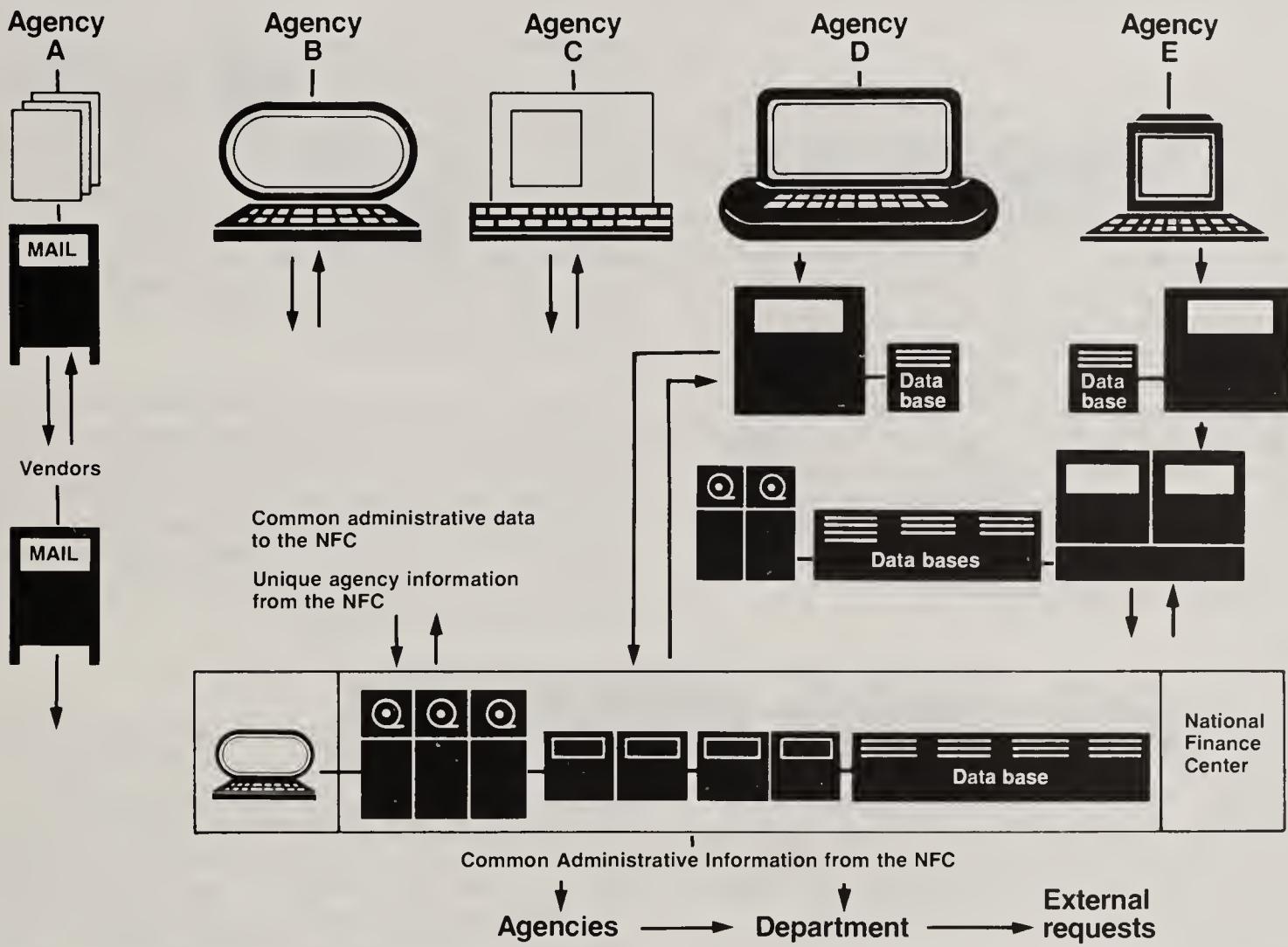
1. Recommended Architecture—Features

The primary features of the recommended architecture are as follows:

- Process *common* administrative functions centrally. This requires little change in present NFC operations.

- Establish intelligent pre-processing of all administrative actions as the long-range goal.

- Until agencies can provide intelligent pre-processing, use remote multiple access into the NFC.

- Use DEPNET for communicating betwen various agency locations and the NFC.

- Develop local files by capturing data locally when it is entered into the system for transmission to the NFC.

- Rely on electronic local files in lieu of paper.

- Rely on local files to produce local reports.

- Rely on central files to produce central reports.

2. Relationship—Architecture to Problems

The problems with current administrative processes as

described by Agencies are accuracy, access, timeliness, control and volume of paper. The proposed architecture deals with each as follows:

• Accuracy

Several Office of Inspector General (OIG) reports have identified problems regarding the number of transactions rejected by edits at the National Finance Center (NFC). As many as 25 percent of the administrative payment transactions are rejected by NFC edits. When the correction of rejected transactions cannot be made immediately, items are placed in suspense for further review. If suspensed at the time reports are produced, these transactions are not included in the report. This appears to be the basis for widespread agency lack of confidence in the accuracy of NFC reports. According to OIG, 85 - 90 percent of errors occur at the originating location. If intelligent pre-processing is used, the errors should be identified by front-end edits. Corrections can be made on the spot. Clean data into the system will reduce the number of transactions in suspense, increasing report accuracy.

• Access

The proposed architecture provides increased agency access in two ways. First, as an agency creates (keys) and transmits a transaction to NFC, an electronic file is created locally. This file can be used to generate local reports. We expect these local reports to meet more than 75 percent of the local needs. Second, as NFC enhances central systems, particularly with use of data base software, agencies will have direct access into the central files.

• Timeliness

Most questions will be answered on an as-needed basis. Some paper reports, covering a specific period of time, will still be prepared. These reports will be used for trend analysis and reconciliation of local and central data bases. Immediate access to local data bases and remote access to central data bases will be used to meet management information needs. Timeliness is assured.

• Control

Intelligent pre-processing gives agencies front-end control through onsite error correction and adjustments. Localities can design their own reports from local data bases. With this control, agencies also become more accountable. The requirement for agency reivew and approval of centrally prepared reports com-

plements the front-end control and "closes the loop."

• Paper Volume

NFC already receives many transactions in machine readable form. In calendar year 1981 about 7.4 of 12.5 million total transactions were either transmitted or in machine readable form. Elimination of paper is cost effective and highly desired by agencies. COOPERATIVE PROCESSING eliminates the need to send agency-originated paper to the NFC. Most vendor invoices will still be in paper form. Agencies and the NFC must cooperate to develop acceptable audit trails. Ideally these audit trails should be electronic to eliminate paper at the local site as well.

T&A's are currently scanned by an optical character recognition machine. This process is efficient for the NFC, but places a clerical burden on the agencies and generates massive quantities of paper. COOPERATIVE PROCESSING calls for electronic transmission of T&A information. It also calls for a detailed review to see if agencies can process some portions of program accounting driven by the T&A.

B. Information Flow

Every administrative action starts with a request. The request should be made in electronic form. It then flows through Agency prescribed approval channels. The information flow is dictated by organization and assignments of responsibility. After approval, information flows to the NFC for processing. Local data bases will be supplemented by direct access to the NFC and the transmission of NFC files to a local computer.

Figures VI (4) and (5) depict information flow for personal/payroll transactions, and acquisition and inventory transactions.

C. TECHNICAL IMPLICATIONS OF ARCHITECTURE

1. Telecommunications

COOPERATIVE PROCESSING expects the continued use and further negotiation of the DEPNET contract. We must define and publish telecommunication standards permitting effective communication of information created and stored in different types of hardware. We expect some development of local area networks. They should be incorporated into the negotiation of the DEPNET contract.

Figure VI–2
Flow-intelligent pre-processing
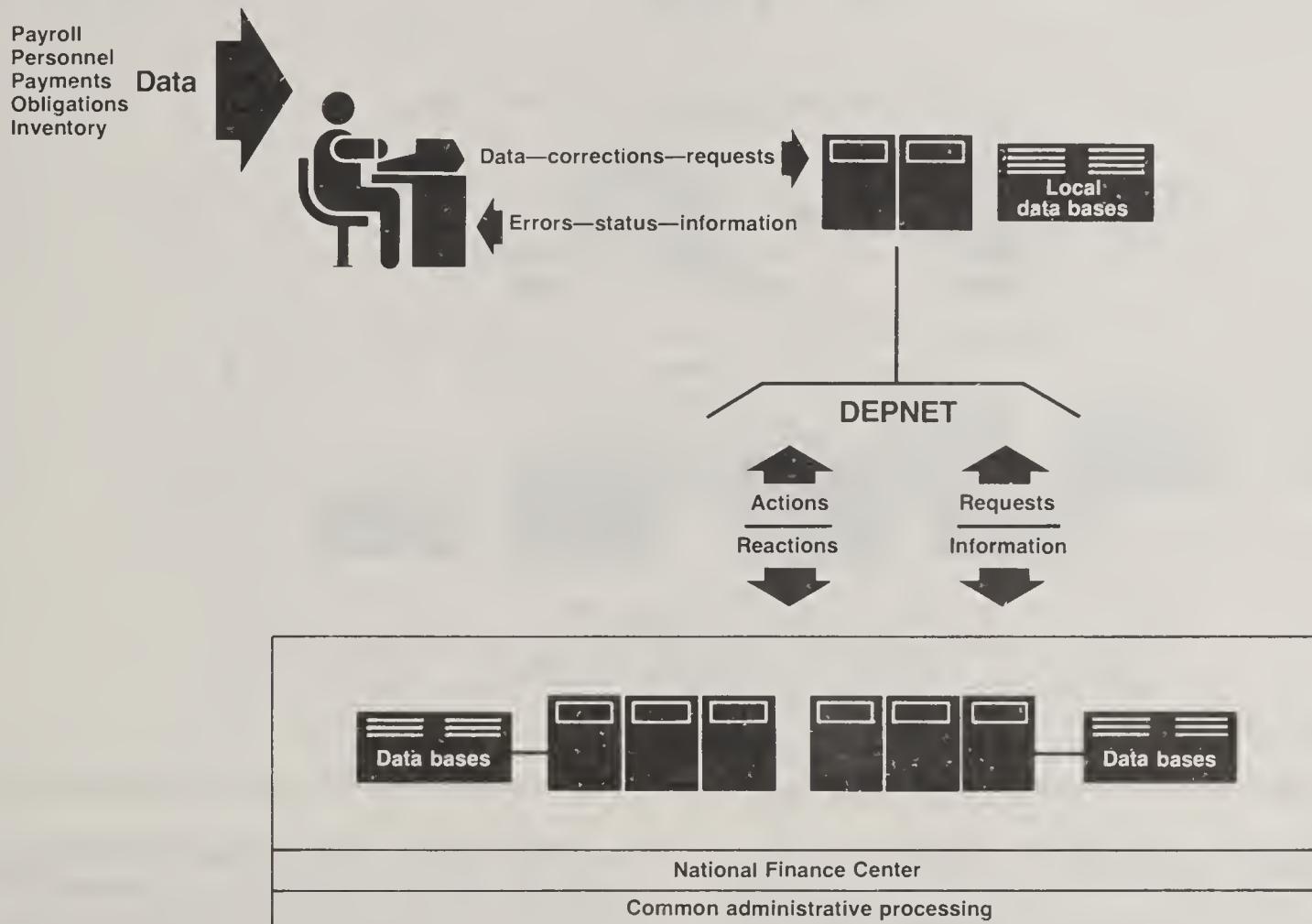
2. Data Base Software

COOPERATIVE PROCESSING requires the use of data base software not only on central operations, but also on minicomputer and microcumputer installations. It envisions the creation of files at the local level at almost no cost. This projection is based upon using data base software to establish a file at the time transactions are communicated to the National Finance Center or an agency-established concentration point. We must use data base software to avoid the costs and problems involved in writing special programs.

3. Remote Multiple Access

COOPERATIVE PROCESSING provides for remote multiple access into data bases at the NFC. This access serves two purposes. One, it provides an interim capa-

bility for agencies which have not yet developed internal capacity, or do not have a need for internal capacity. Two, it provides a resource to supplement local data bases and a basis for reconciliation of local and central data bases.

The National Finance Center has requested approval for a "fourth generation" software package. This package allows the transfer of information from a central site to a microcomputer under the same data base management system. A local user could request the transfer and then do local analyses on the microcomputer. The Reform #1 team has not analyzed the specific package requested, but supports the concept enthusiastically.

Figure VI-3
Flow of remote multiple access
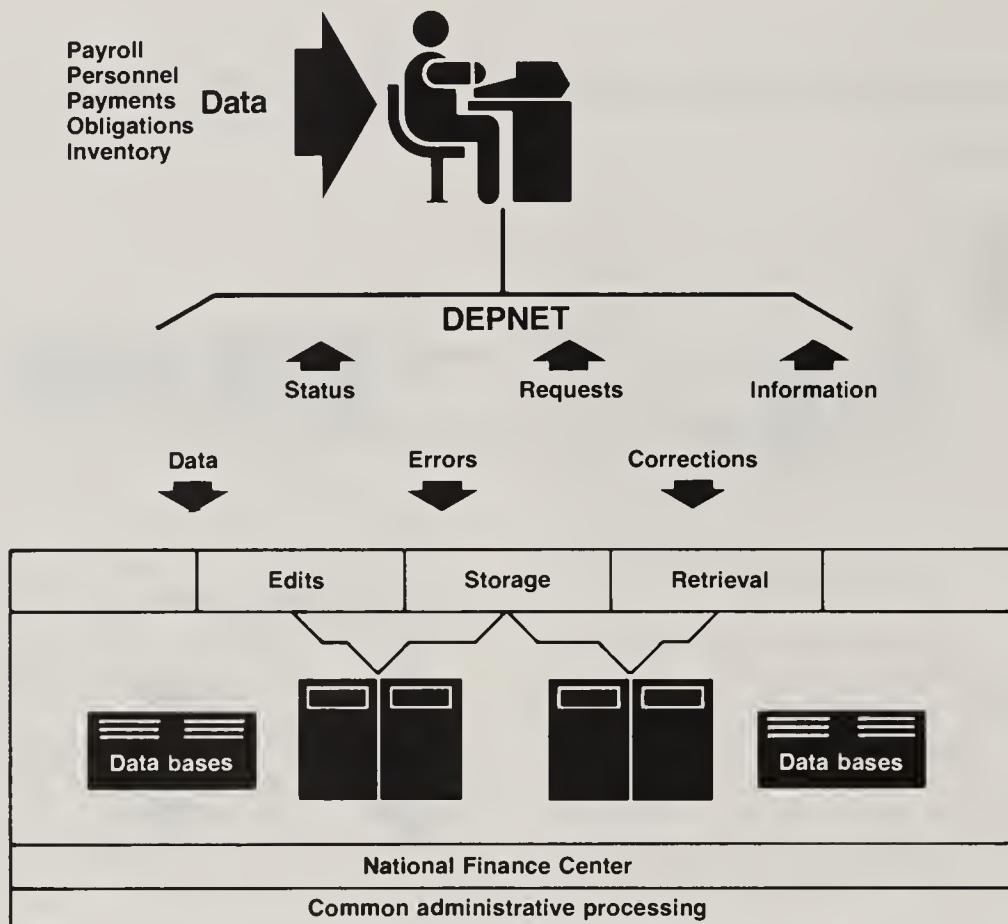
4. Intelligent Pre-processing

COOPERATIVE PROCESSING expects intelligent pre-processing throughout the Department. NFC must develop and publish edit specifications. The creation and maintenance of the actual edit programs is an agency responsibility.

D. Implications—Organizational and Institutional

The architecture recommended is not a radical departure from the existing situation. The common administrative processes are recommended for continuing centralization. The data elements which have been captured at the NFC in processing these applications generally appear to be the core data elements of the Department.

Three major groupings are involved in administrative systems—Department staff offices, the National Finance Center, and the individual agencies. In most discussions each group instinctively referred to the others as "they," while identifying themselves as "we." As we move into COOPERATIVE PROCESSING, these attitudes must change.

Traditionally there has been a view that solution to a system problem is either accomplished through 100 percent centralization or 100 percent decentralization. This has produced a fear of anarchy or noncohesive development of administrative applications. Every agency has developed systems, either manual or automated,which complement and supplement the NFC administrative processes. COOPERATIVE PROCESSING merely validates these activities, encourages automation, and eliminates the redundant keying involved in

Figure VI–4
Electronic time attendance flow
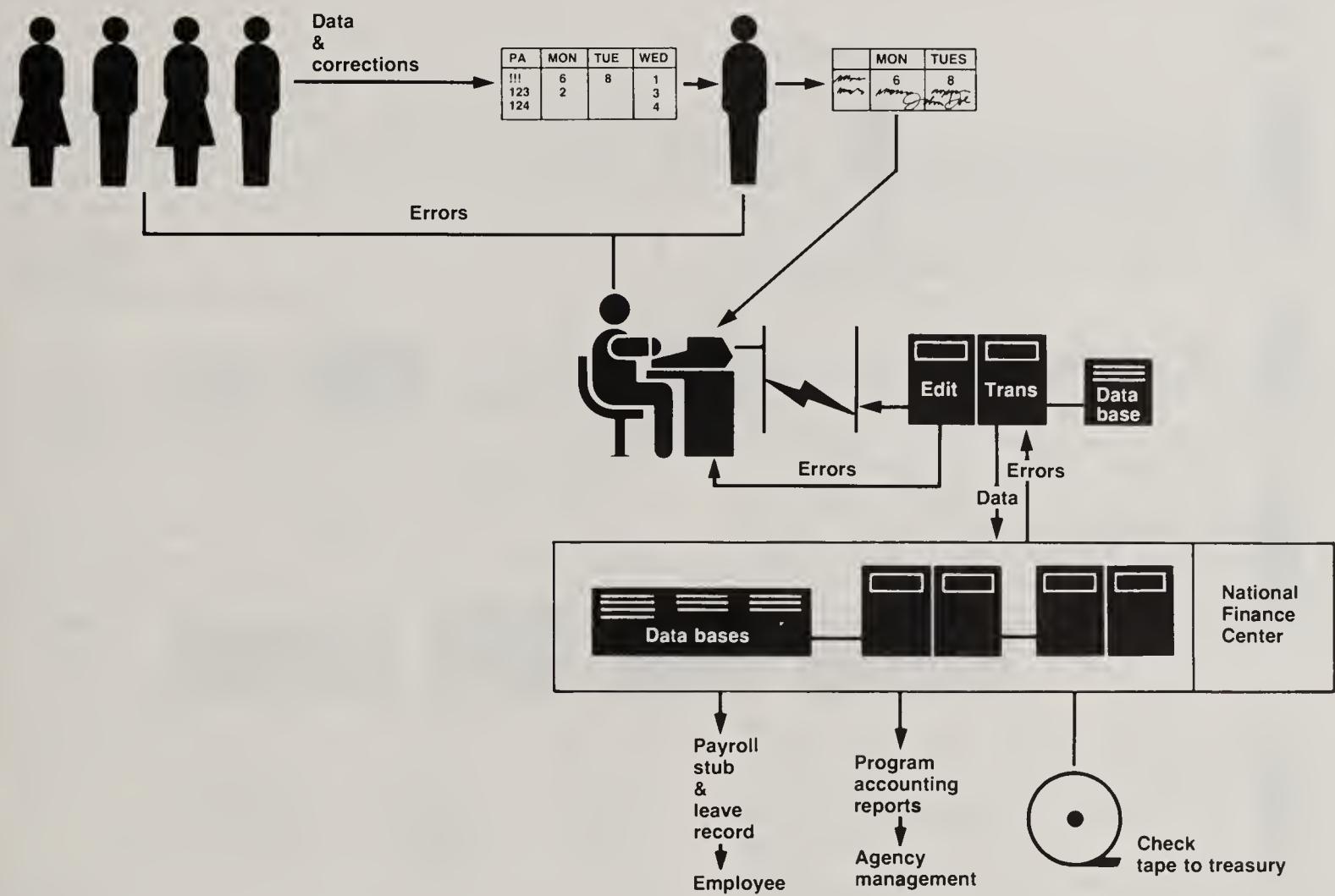
the creation of paper and subsequent keying into a computer.

The implications upon the three major components of administrative processes are as follows:

1. *The Department* must exercise more leadership in the management of administrative systems. This leadership includes:

• the management of the national Finance Center itself

• the conscious movement toward elimination of the "they - we" syndrome and supporting cooperative solutions to problems

• the establishment of priorities for the development of Departmental Administrative Systems

• the promulgation of administrative systems plans to both the NFC and the agencies, enabling them to more effectively plan their own systems development activities, and

• development of structures and processes needed to implement Reform '88 changes.

Staff offices in the Department will need to develop or recruit for new skills to deal with COOPERATIVE PROCESSING. Departmental administrative system planning is a staff office responsibility. The 1984 Guidance for Long-Range Information Resources Management directs staff offices to develop and submit plans for systems in their respective areas of responsibility. These plans will play a critical role in establishing priorities for the NFC. They will also provide a framework to simplify agency planning.

Figure VI–5
Electronic procurement and inventory flow
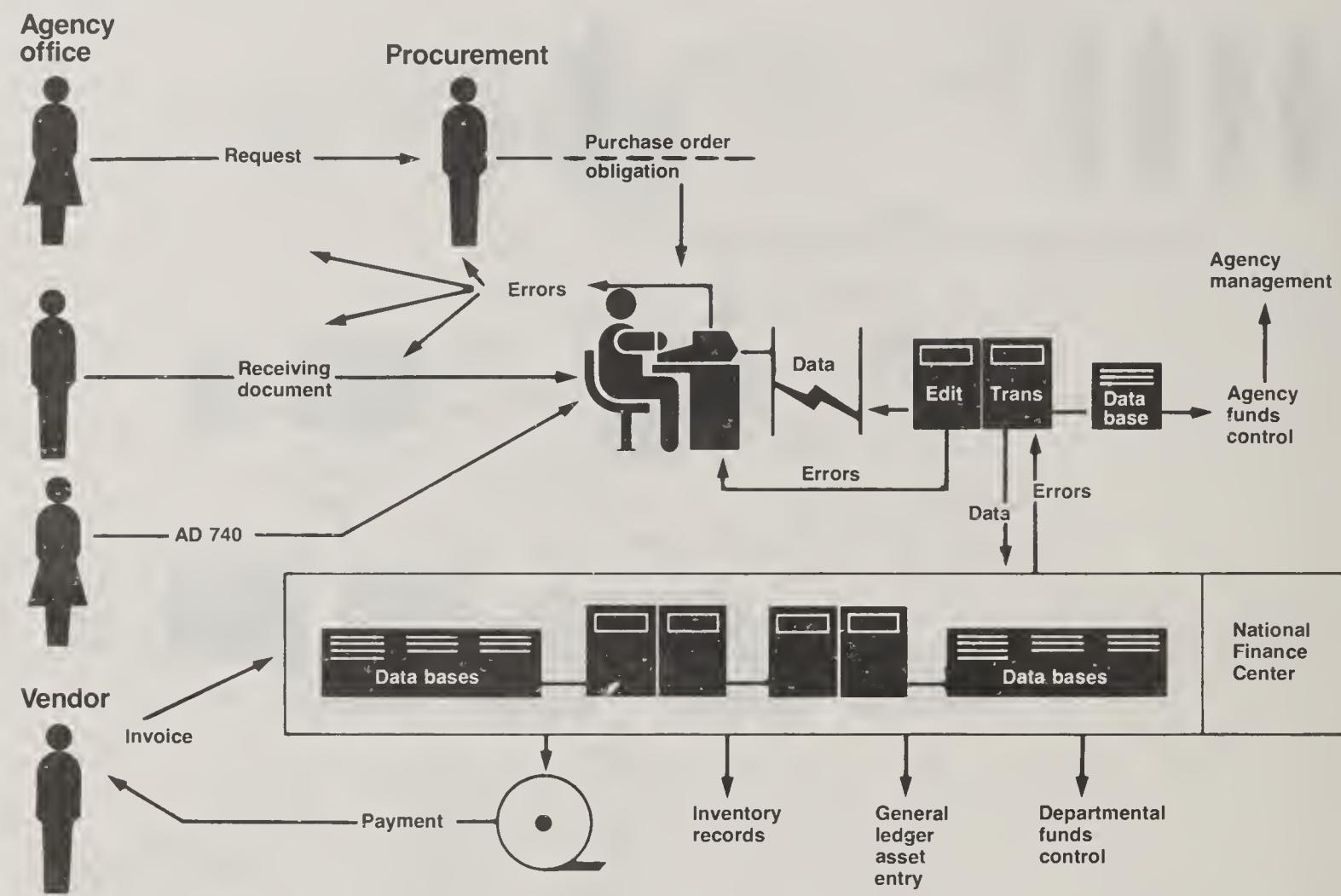
Skills must be developed to perform data management functions. Staff offices will have organizational responsibility for assuring the availability and protection of Departmental data. Three primary questions must be addressed.

Where is the data? Under centralized processing, most administrative data was stored in one place. With COOPERATIVE PROCESSING, parts may be in different places. We must know where it is. Designating NFC records as the official USDA records reduces, but does not eliminate, the potential problem.

In what form is the data? If users have different names and formats for the same items of information, we have serious problems. There are solutions, though sometimes cumbersome, to hardware compatibility problems. There is no way to solve data incompatibility. Staff of-

fices must have the organizational capacity to maintain the names and formats and protect the integrity of Departmental information.

How can we protect the data? Data security is close to a "Catch 22" situation. On one side, users clamor for easier access to information. We want to meet that need and make information readily available, with little complication, to those who should have it. Make the system user friendly. Don't require special skills. These are constant themes for modern systems.

On the other side, we want to be 100 percent certain that the wrong people don't get at our information. We want to store information locally, use software readily available to the general public, and also prevent unauthorized access.

Balancing these extremes is a difficult and continuing management responsibility. It requires establishing and nurturing security-consciousness in all employees using the system. It requires guidelines, monitoring, and discipline. Staff offices have the responsibility for security of data used in their sponsored systems.

2. The National Finance Center

The NFC organization structure will be impacted in two areas. First, there will be a drastic reduction in entry, inquiry, and correction functions and staff. Electronic transmission will almost eliminate key entry of actions started within USDA. (Vendor submissions will still need keying.) Pre-edits should greatly reduce the error reject rate, reducing correction needs at the Center. Local data bases and direct access will reduce or eliminate the inquiry functions. As these processes are implemented, staff reductions will occur.

The second major impact upon NFC as an organization will be th expanding technical assistance role. NFC has created an Information Service Center. As more end-users, with limited technical experience, want to tie into the NFC, many questions will arise. Even with all standards published, many users will need specific instructions on how to send or access ifnformation. User assistance and possibly user training will be an expanded function.

The National Finance Center must also recognize it does not have a responsibility to be all things to all people. Given the advent of COOPERATIVE PROCESSING, with significant information available to the agencies, the management information needs will often be met by the agency without resort to the capabilities of NFC. The National Finance Center, the agencies, and the Department must all recognize that there are alternative means of meeting needs and choose the one that meets the "make sense" approach advocated throughout the Department's Reform '88 program.

The National Finance Center must develop more flexibility in terms of technological interface and technical support. While systems have been designed which tailored outputs for agencies to meet unique needs, technical interface is generally dictated by the architecture,existing at the NFC. Developing methods to accommodate the variety of hardware and other technology in the agencies may not be cost effective for the NFC itself. However, movement toward these interfaces must consider the total cost, including the costs incurred by agencies.

Agencies

The proposed architecture does not require any change in agency organization structure. In fact, COOPERATIVE PROCESSING provides support for all agency structure. It permits organizational decisions for management reasons without limitations caused by technology.

Agencies will face change with COOPERATIVE PROCESSING. Automation threatens jobs. Some threats are real, and others perceived, but all fears are real. Agencies must respond to those fears. Involve users who feel threatened in the design of the new processes. Set up training programs to provide experience and develop new skills suited to the new environment. Recognize and reward those who react positively and help changes occur. These are typical responses to employee fears. They only suggest the depth and width of responses which must be developed within agencies.

The work place will be changed by COOPERATIVE PROCESSING. Records and transactions will be created, stored, and transmitted electronically. Today this is done on paper. We are accustomed to paper. Our tendency will be to think, "Well, I sent this to headquarters for approval, now I'll make a hard copy for my files." If this predictable reaction is not managed, benefits of automation will be degraded.

Today's processes and procedures rely on multiple reviews with signatures as a form of pre-audit and control. In an automated environment, such approaches must be reconsidered. Security, access, audit trails, and other modes of control must also be adapted to an electronic automated environment.

Finally, agencies must hone their skills in deciding what to automate. With data base management systems and other software capabilities it becomes possible to automate "everything." Simple manual processes that work might be automated to create complex, confusing processes that don't work. Agencies must be able to distinguish between applications which have real benefits from those which may be possible but inefficient.

E. Cost Implications

Traditional cost analyses for data processing development and operations are obsolete. Past analyses were upon expensive mainframes, high cost electronic storage, and the use of internally developed program

codes to perform processes or to extract information. Existing and projected technology no longer fits the characteristics of previous analyses. An extract from the technological assessment developed by the Department of Agriculture and published in January of 1984 entitled "Observations on Micro-Computer Technology and Management Trends" resulted from a National Executive Forum of the National Academy of Sciences held in November 1983. The experts, who were assembled from all parts of the private sector, were unanimous in their projections toward faster, cheaper, almost no cost availability of technology hardware. This paper includes a projection that a microcomputer in the mid-1980's will cost less than $5,000 and be able to process between one and four million instructions per second. Another of the experts states that within 10 years we will have unlimited, virtually free, storage and computing power. This change in the cost factor allows and supports decisions to be made based on organizational needs rather than on acquisition and maintenance cost of technology.

Recognizing that COOPERATIVE PROCESSING will result in many solutions for specific problems, costing must be done on an individual basis by agencies. Each must determine the most appropriate way to interface with the common administrative processes to be performed at the National Finance Center. The cost implications therefore are dealt with in terms of the major functions to be performed in having an administrative system work. These functions have been defined as data collection, data storage, data transmission, data entry, and data manipulation. These functions are similar to those addressed in the NFC study entitled "Analysis of Distributed Processing," May 1983.

Comparing costs between the current process and the proposed COOPERATIVE PROCESSING involved making certain assumptions. They are conservative, especially on the side of the current process. By doing this, we have narrowed the differences probably to the effect that they are understated, therefore easily defended. The assumptions follow:

— *Annual volume of 10 million transactions.* Derived from the NFC volume of 13 million transactions less Program Billings and Collections and Central Accounting actions.

— *No cost reduction associated with eliminating special forms.* Although this would have reduced the cost of COOPERATIVE PROCESSING, it was not considered.

— *Redundancy of paper document storage.* Even though most of the transaction documents are multipart forms, the assumption used is that only 50 percent of the paper is redundantly stored.

— *Electronic storage of data.* This is treated as a fixed cost, nonreusable resource. In reality, the cost woiuld be less if it were consdered to have a systems life and to be reusable as records were purged.

— *Electronic transmission of data.* A large record size (420 characters) and a slow transmission speed (1200 baud) were used to develop the cost. This inflates the cost of the COOPERATIVE PROCESSING alternative.

— *Mailing costs of paper documents.* To cover the variety of mailings, eight documents for each first class mailing was assumed to be the "norm."

— *Correction of current entries.* The current error rate is somewhere between 10 - 30 percent, depending on the source; however, for purposes of costing, we have assumed that most of these errors are corrected in the normal process and have not included any additional cost for them. We have estimated, however, that 2 percent of the documents involve an error that requires a telephone call to the source to correct. The OIG report on the NFC Administrative Payments Systems, dated May 5, 1980, placed it at 45 percent (p.8). We chose *not to* include personnel costs associated with these telephone calls.

— *Correction of COOPERATIVE PROCESSING entries.* Even with pre-editing of transactions, we are assuming that 2 percent of the records will contain an error that will require a telephone call to correct.

— *Computer time.* Even though processing time at the NFC would be reduced under COOPERATIVE PROCESSING and its pre-editing capabilities, we assumed no difference in costs.

— *Computer Paper.* Based on NFC budget items and stated output volumes, a cost of $10 a box is used for current systems. However, this cost is significantly less than GSA quotes. Recognizing this higher GSA cost, a cost of $30 a box is assigned for local output COOPERATIVE PROCESSING.

— *Data Entry in Current Process.* The costs shown do not include personnel costs (mail room, etc.) associated with receiving the records.

Costing Table

FUNCTION	CURRENT PROCESS $	COOPERATIVE PROCESSING $
Data Collection	20,000,000	20,000,000
Data Storage	436,000	672,000
Data Transmission	250,000	135,000
Data Entry	1,000,000	200,000
Data Manipulation	1,800,000	367,000
TOTAL	23,486,000	21,374,000
DIFFERENCE		(2,112,000)

NOTE: The basis for the numbers presented in this table follows.

The numbers do not include savings identified in other parts of this report.

Basis of Calculations - Costing Table

Current Process Functions	Formula
Data Collection	$1.54 to fill out form +.42 to type form $1.96 total per form × 10,000,000 forms
Data Storage	6250 sq. ft. to store 10,000,000 records 10.61 per sq. ft. annual cost for storage plus 50% annual cost for redundant storage plus 8 millicents per byte × 420 byte records = $.0336 per record × 10,000,000 (electronic storage at the NFC)
Data Transmission	8 records per first class mailing ($.20) $.025 per record × 10,000,000 records
Data entry	$0.8 per record × 10,000,000 records + 200,000 records (2% error rate) × $1.00 (FTS rate for 3 minute call to correct error)
Data Manipulation	433 million pages of output = 100,000 bxs. at $10. per box + $800,000 for mailing

Cooperative Processing Functions	Formula
Data Collection	Same cost, $1.96 per form, as in Current Process
Data Storage	8 millicents per byte × 420 byte = $.0336 per record × 10,000,000 records × 2 (NFC and local rec.)
Data Transmission	20 records per minute at $.27 per min. = $.0135 per record × 10,000,000 rec.
Data Entry	Initial entry covered by data collection costs 2% error rate at NFC produces cost of 200,000 records × $1. (FTS rate for 3 minute call to correct error)
Data Manipulation	87 million pages (20% of 433 million for Departmental and external reports) = 20,000 boxes × $10. per box + mailing costs of $160,000 + 250 boxes × $30. per box (for local printing of 1,000,000 pages)

VII. Key Recommendations

The key recommendatios listed below provide the basis for the changes in USDA administrative processes.

A. Institute COOPERATIVE PROCESSING within USDA by recasting Secretary's Memorandum 1776 to:

- Authorize and encourage the establishment of local agency data bases to support unique portions of administrative operations and provide management information for tracking and fund control purposes.

- Direct continued centralized processing of common administrative activities. (Includes payroll, payments, billings and collections, Departmental Personnel System, and maintenance of the general ledger.)

- Direct central preparation of all administrative reports to elements outside USDA explicitly establishing the central data bases as Official Department Records.

- Require agencies to review and approve all central reports before submission to external elements.

B. Approve the Reform #1 recommended definition for common administrative processes.

This definition recognizes that although portions of the administrative processes are common, agency needs for authorization, control, and tracking may be unique.

C. Establish and maintain a Departmental data dictionary for USDA Administrative Systems.

This dictionary should define each data element of the *common* administrative systems, establish the size of the data elements (number of characters), and identify the process it supports. Assign to the appropriate USDA staff office the responsibility for initial definition and any subsequent change. Assign the Office of Information Resource Management (OIRM) responsibility for assuring coordination of data elements crossing functions of the staff offices, as well as assuring the maintenance and publication of the dictionary.

D. Establish a long-range goal for intelligent pre-processing of all administrative transactions initiated by agencies.

Actively promote the use of electronic transmission of administrative transactions. Emphasize entry by responsible officials, avoiding redundant creation of hardcopy documents to be forwarded to a data entry clerk.

E. Support the development of agency data bases and electronic transmission of administrative information.

In addition, enhance NFC operations to service those agencies currently without internal capabilities.

F. Develop Departmentwide programs for the enhancement of skills of both administrative and managerial personnel.

Nurture and expedite the development of end-user computing.

VIII. Implementation Strategy

Implementation requires two steps. First, recommendations must be reviewed and accepted, rejected, or changed. Second, an institution or structure must be established and given responsibility for implementation.

The review and decision process begins with the submission of this report on March 30, 1984. The following actions and dates are recommended.

Event	Responsibility	Date
Report Submission	Reform #1 Team	March 30, 1984
In-depth review (off-site)	Ad Hoc Committee Reform #1 Team	April 10-12, 1984
Forward to Agencies and Staff Offices for Comment	Assistant Secretary for Administration	April 23, 1984
Agency Comments Received	Assistant Secretary for Administration	May 10, 1984
Comments Analyzed	Reform #1 Team Ad Hoc Committee	May 15, 1984
Present Results to Management Council	Ad Hoc Committee	May 18, 1984
Final Decisions	Assistant Secretary for Administration	May 25, 1984

The two organization recommendations of the Reform #1 Team provide a framework for managing the change to COOPERATIVE PROCESSING. The first proposes a temporary (2-3 year life span) implementation staff reporting to the Assistant Secretary for Administration. This temporary staff (approximately 4 FTE) will work with the Ad Hoc Committee to develop implementation plans for approved Reform #1 recommendations, and direct the implementation of that strategy.

The functions to be performed by this staff include:

● developing detailed plans for approved projects,

● assigning agency and NFC responsibilities,

● coordinating with agencies, Staff offices and the NFC,

● monitoring progress, and reporting progress to the Assistant Secretary for Administration and the agencies.

The following is a proposed sequence of events:

Event	Responsibility	Date
Establish Organization	Assistant Secretary for Administration	May 30, 1984
Write Descriptions of Duties	Reform #1 Team Ad Hoc Committee	June 8, 1984
Select Staff Director	Assistant Secretary for Administration	June 18, 1984
Select Personnel	Implementation Staff Director	June 25, 1984
Detail Selected Personnel	Office of Personnel	June 25, 1984
Arrange for Facilities	Office of Operations	June 25, 1984
Receive Approved Recommendations	Implementation Staff	June 28, 1984
Poll Agencies for Interest in Lead Role	Implementation Staff	July 2-27, 1984
Designate Lead Agencies	Assistant Secretary for Administration	July 31, 1984
Coordinate Agency/ NFC Action Plan Development	Implementation Staff	August 1-24, 1984
Develop Action Plans	Designated Agencies	August 1-24, 1984
Present Overall Implementation Plan to Systems Review Board	Implementation Staff	August 30, 1984
Approve Implementation Plan	Assistant Secretary for Administration	September 14, 1984
Monitor Actions and Report Progress	Implementation Staff	Monthly Beginning September 30, 1984

The second organization recommendation is to establish an "Information Processing Administration," also reporting to the Assistant Secretary for Administration. This element would be a line organization which directs and manages the operations of the National Finance Center and the Departmental Computer Centers. Increased Department management of the National Finance Center is a must for implementation. Department Computer Centers will probably serve as concentration points for certain operations. Constant contact and coordination between the "Implementation Staff" and the Washington based Information Processing Administration will help keep things moving smoothly.

IX Synthesis of Recommendations and Rationale

Recommendations - Policy

1. Institute COOPERATIVE PROCESSING within USDA by recasting Secretary's Memorandum 1776 to:

● Authorize and encourage the establishment of local agency data bases to support agency specific portions of administrative operations. Authorize and encourage local data bases to provide management information for tracking and fund control purposes.

● Direct continued centralized processing of common administrative activities.

● Direct central preparation of all administrative reports to elements outside USDA, inherently establishing the central data bases as official Department records.

● Require agencies to review and approve central reports before submission to external elements.

2. Approve the Reform #1 recommended definition for common administrative processes. This definition recognizes that although portions of the administrative process are common, agency needs for authorization, control, and tracking may be unique.

3. Establish and maintain a Departmental data dictionary for USDA administrative systems. This dictionary should define each data element of the *common* administrative systems, establish the size of the data elements (number of characters), and identify the process it supports. Assign to the appropriate USDA staff office the responsibility for initial definition and any subsequent change. Assign the Office of Information Resources Management (OIRM) responsibility for assuring coordination of data elements crossing functions of the staff offices, as well as assuring the maintenance and publication of the dictionary.

4. Establish a long-range goal for intelligent pre-processing of administrative transactions inititated by Agencies. Actively promote the use of electronic transmission of administrative transactions. Emphasize entry by responsible officials, avoiding redundant creation of hard copy documents to be forwarded to a data entry clerk. Assure that decisions on how to process are balanced. Cost considerations must include costs to the agencies and not only the central operation.

5. Support both development of agency data bases with electronic transmission of administrative information and the enhancement of NFC operations to service those agencies currently without internal capabilities.

6. Develop throughout the Department programs for the enhancement of skills of both administrative and managerial personnel to nurture and expedite the development of end-user computing. Activities should be made consistent with Reform #9 results.

7. Discourage, both in policy issuance and in subsequent management reviews, development of application specific programs to support end-user computing. Utility software such as data base management systems and electronic spread sheets should be used to the extent possible. Off-the-shelf application packages should be strongly preferred to development of individual programs.

8. Emphasize the role of appropriate staff offices in the Department to establish and promulgate policy on administrative systems. In many instances staff offices have not exercised their leadership responsibility. The National Finance Center has been perceived as assuming this role.

9. Assign to the agencies specific responsibility for internal controls over administrative transactions from the point of inception to receipt by the National Finance Center. Agencies are also responsible for assuring reconciliation of information provided by NFC after payment or other action. Assign responsibilities for controls within the Center to the NFC. Assign the responsibility for assuring complementary functioning of these controls to the Office of Finance and Management.

10. Use the existing USDA personnel data base structure as the foundation for the system of the future. The NFC system now contains the data elements necessary to meet validated Departmental requirements. It has been designed in a data base management environment. The existing system fully supports the payroll process. It lacks software capability to support all necessary processes and provide ad hoc management reports. Results of evaluation of the Air Force and NFC pilot tests should be compared with the reforms proposed by the personnel team. Required systems enhancements identified from this review should be implemented quickly.

11. Continue to emphasize long-range USDA goal of having one primary accouting system. Emphasize improvement of the Central Accounting System (CAS) to meet agency specified needs. This improvement should occur prior to directing inclusion into CAS.

12. Direct OFM to take needed corrective actions to obtain required GAO system approvals.

13. Manage the use of telecommunication resources. Particular concern should be aimed at the selection of

applications/systems to be operated in a telecommunications mode, the determination of cost effective means of transmission, and the possible selection of reduced cost times for routine bulk transmission.

Rationale - Policy Recommendations

The 12 policy recommendations address five primary themes - the same ones which dominate the Reform #1 project report:

● Build upon USDA past successes, particularly the efficiencies of central processing of common administrative actions.

● Recognize the tremendous changes in the capability and cost of processing technology and provide a management environment that encourages more automation.

● Distinguish between common activities and unique activities. Gain the cost reductions of one place development of common systems, but don't unnecessarily restrict separate development of the unique processes.

● Manage data. This is the key to solving compatibility problems. The USDA is in an enviable position as compared to the rest of Government. Centralized systems exist. Many of the objectives of the Administration's Reform '88 Program have already been achieved by USDA. The existence of standard administrative data elements in the central systems is a major asset. The stage is set for managing data effectively. The responsibilities must be assigned.

● Develop the people within USDA to take advantage of new technology. Change the mind-set that wants a piece of paper. Don't use clerks to enter what has already been written by a manager or a technician. Get the computing power out to that manager or technician and let her/him enter information. Vendors of equipment will provide technical "how-to-use" training. People development is a broader issue.

The policy recommendations are interdependent. More flexibility is provided to the agencies on the basis of increased Departmental management of data. Central reporting provides Departmental capability to monitor. They are based upon recognition of cost efficiencies already achieved at the NFC, the growing agency computing capability and a projection of much lower costs for technology in the future.

Two prarticularly controversial recommendations relate to the future of the USDA Personnel and Central Accounting Systems. The requirements review done by

the personnel team showed that the present USDA personnel data base contains the essential elements necessary to support identified and validated user requirements.

The personnel/payroll system does need improvement. It is not yet certified by the General Accounting Office (GAO). Some old programs are running under emulation. Documentation, the constant nemesis of all automated systems, is weak. Inspector General reports have identified weaknesses. However, the new system does use data base management software, does pay on time and accurately, and does provide some user access. The improvements of the personnel/payroll system addressing the problems should become a priority project. The Reform #1 group recommends the Department complete its evaluation of the Air Force and NFC pilot tests, compare the results with the reforms recommended by the personnel team and establish priorities for system improvement. These improvements should build upon the existing USDA data base structure.

The second recommendation sure to provoke controversy is that the Department proceed cautiously toward the long-range goal of one accounting system. Most USDA agencies currently use the Department's Central Accounting System. Negotiations to incorporate the Soil Conservation Service (SCS) are progressing well, and should continue expecting 1985 to be the year in which SCS goes on the system. Other agencies are targeted for future inclusion in the Central Accounting System.

We recommend that the CAS be improved, to provide much greater agency access, prior to scheduling the inclusion of additional agencies.

The Central Accounting system has not yet been approved by the General Accounting Office. This approval is one of the stated goals of Secretary's Memorandum 1776, which was issued in 1973. The Department should emphasize cooperative efforts with GAO to agree upon weaknesses, take the necessary corrective action, and obtain approval.

Recommendations - Organization

1. Establish an Information Processing Administration reporting to the Assistant Secretary for Administration. This administration would be responsible for managing and directing the operations of the three Departmental Computer Centers and the National Finance Center (NFC).

2. Establish a temporary (2-3 year life span) Reform #1

implementation staff reporting to the Assistant Secretary for Administration. This temporary staff (approximately four FTE) will develop with the Ad Hoc Committee an implementation strategy for approved Reform #1 activities and direct the implementation of that strategy.

Recommendations - Roles and Responsibilities

1. *USDA Management Council*
Provide for agency awareness of long-and short-term plans for administrative systems. Management Council member organizations provide membership for the Working Capital Fund Interagency Advisory Board and the Departmental Systems Review Board.

2. *Working Capital Fund Interagency Advisory Board*
Review plans, budgets, and operation costs of NFC. Where cost-effective, recommend adequate capital investment to provide organization stability for NFC and take advantage of cost-effective purchase of equipment.

3. *Departmental Systems Review Board*
Assure consistency among agency and Departmental plans for automated administrative systems.

4. *USDA Office of Information Resources Management*
Provide permanent chair for USDA Systems Review Board. Maintain and publish data dictionary for administrative systems.

5. *Information Processing Administration*
Manage and consolidate plans of Departmental computer centers and NFC with the long-range goal of networking these facilities and providing for sharing of workloads.

Present plans and budgets to the Departmental Systems Review Board.

6. *USDA Staff Offices*: Develop, publish, and maintain specific objectives for enhancement of administrative systems within functional responsibility. Incorporate objectives into the long-range IRM planning process.

Develop, publish, and maintain a data dictionary for core Departmental data elements within assigned functions. Coordinate with OIRM to assure multiple-use data elements are consistent.

Develop a specific skills enhancement program for Departmental personnel and publish guidance to agencies to stimulate and support similar agency programs. Coordinate with Office of Personnel to assure reasonable consistency.

7. *National Finance Center*: Develop, publish, and maintain technical specifications for edits on common administrative transactions.

Develop, publish, and maintain menus of technical specifications to facilitate agency connections to the NFC. These menus must address both agency hardware environments and the agency choices of processing for administrative systems (e.g. paper, magnetic tape, batch electronic transmission, interactive).

Rationale - Roles And Responsibilities Recommendation

The recommendations on roles and resposibilities are designed to deal with:

● Supporting the USDA long-range IRM planning process.

● Increasing the Department staff offices' roles in administrative systems management, particularly central operations.

● Providing a means for early budget and resources decisions for the NFC. This gives predictability of costs to the agencies and stability to the NFC.

● Creating a mechanism for paying for NFC services without developing an expensive and complex cost accounting system.

● The roles and responsibilities recommendations link existing USDA processes and institutions. They provide definitions of relationships. They give a framework for developing cooperative answers to the questions involved in every administrative systems effort. What needs to be done? Who should do it? How should it be done? What are the priorities? How much will it cost, and who will pay for it?

The USDA long-range IRM planning process is sound. It provides information for future projections of technology and its costs, as well as a structured process for agency and staff office pratication. The roles and responsibilties proposed take advantage of this process.

Who pays the cost of central operations? This has been, and will continue to be, a controversial issue. As budgets tighten, people are more concerned about these costs. The immediate proposed solution is a cost accounting system. It will clearly identify the cost of a discrete service and charge that cost back to the user. This approach has instantaneous appeal. It is straightforward and fair.

Very complex questions must be addressed in moving to a cost reimbursement mode. Can we accurately define cost factors? What is the line between programming for system maintenance and new development? How can we make capital investments and reduce future costs? As agencies pick up some portion of the workload on administrative system, should we reduce their costs? Given the extent of fixed costs in operating the NFC, must we then increase costs to other agencies? How much of the central operation operates primarily for Department and not Agency benefit? Who pays for sunk costs of past development? How do we allocate overhead costs? Who pays for special solutions to compatibility problems?

The roles and responsibilities recommended provide for an approach to funding the NFC without a sophisticated cost accounting system. Basically they envision negotiated fixed price levels of service. Agencies and staff ofices are involved in planning activities throughout. Funding levels are agreed upon in advance through budget decisions. This involvement will complement the allocation processes currently used, and avoid the high costs involved in developing, maintaining records on, and modifying a detailed cost accounting sytem.

Recommendations - Technical Policy

1. Establish and publish mandatory telecommunications standards for use within the Department. Provide options for interim use but emphasize X.25 standards, adopted by the Consultative Committee of International Telegraph and Telephone as internationally accepted protocol.

2. Distribute all requests for proposals (RFP) for ADP hardware or software acquisition approved by the Department. This distribution should occur when the RFP is provided to vendors. It should include all agencies, Department staff offices, Departmental computer centers and the National Finance Center.

Establish an inventory of all microcomputer software used throughout USDA. Actively explore the possibility of USDA license to use popular data base management and spreadsheet software.

Rationale - Technical Policy Recommendations

The three technical policy recommendations are suggested for action by the Office of Information Resources Management. They all address the overall issue of interchange between operations.

Telecommunications standards are a "must." Any transfer of information between computers requires common protocols. Standards are still evolving. Existing hardware and software limitations must be accommodated. However, planning and acquisition of hardware and software should be directed to the use of the international standard X.25.

Any major change in hardware or software has a potential impact on each of the Departmental computer centers and the NFC. Communication about changes has sometimes been poor. That results in last-minute notification of a requirement to relate to some new technology. The change may require new hardware or software at the host site or the end-user site. Early notification through formal distribution should reduce problems.

A Forest Service study of the use of microcomputers found that most users wanted spreadsheet and data base management software. A separate purchase is required for each installation. Some vendors provide quantity discounts. Ideally end-users should be furnished an inventory of several available packsages which are approved by the Department for use.

This might include five or six spreadsheet packages and a similar number of data base management offerings. OIRM could then negotiate with vendors for a Department-wide license to use these packages. A fixed fee for a license with unlimited copying authority would permit the Department to offer no cost software to end-users. Not all vendors would be willing to negotiate such an arrangement. Lotus 1-2-3, a very popular spreadsheet package, sells for about $600. If we projected that this will be used at 500 locations within USDA, total purchase costs equal $300,000. Negotiations might result in a license fee of $150,000. End-users would also be helped. They would have to choose between only a few different packages. They would not be required to go through the purchase process.

Recommendations - Major Projects

1. Establish a Departmental task force charged to find ways to eliminate barriers to "paperless" administrative processes. The Assistant Secretary should appoint a leader. The task force should include representatives from the Office of General Counsel, Office of Information Resources Management, Office of Personnel, Office of Operations, Office of Finance and Management, and Office of the Inspector General.

The charter for this effort should include but not be limited to:

- Identification of legal requirements for a signature and/or a hard copy.

- Suggestions for alternative methods to legally meet these requirements.

2. Develop a demonstration project, as provided by section 601 of the Civil Service Reform Act of 1978, for revised position classification methods at the National Finance Center. This effort should be led by the Office of Personnel with continuous participation from the Office of Finance and Management and the Office of Information Resources Management.

Rationale - Major Projects Recommendations

The two recommendations for major projects address fundamental issues blocking the "paperless" USDA—legal constraints and people readiness.

Many requirements have been imposed upon Government operations for pinpointing accountability. These requirements arose in a paper-driven environment. Documents with appropriate signatures must be filed and available for review. Separate signed documents may be required to request an action, to approve it, to authorize funds for it, to officially consummate it, to certify it was done, to authorize payment, and finally to pay for it. GAO rulings require *each* T&A to be signed by a supervisor.

This situation contrasts with the world outside of Government. A person using a bank card can go to a machine, insert the card, enter a code, and obtain cash. No signature. The only paper involved is a copy of the transaction for the individual's records. A credti card holder can place a call on an "800" number, provide the card number, and order merchandise of all types.

Controls are necessary to avoid fraud, waste, and abuse. To move forward in eliminating paper, we must examine traditional controls and look for alternatives other than signed documents. The proposed task force must be innovative. Rules, regulations, statutes, and interpretations to prevent innovation can be found. If the effort stops there, it will accomplish nothing. What changes are required to meet our goals? How can USDA influence those changes? What other, simpler way can we find to accomplish the same objective inherent in the rule? What about electronic signatures? How much can we rely on a personal code? These types of questions must be posed and answered.

The second recommendation deals with classification issues at the NFC. People, their skills, and their mindsets will be critical in implementing COOPERATIVE PROCESSING. NFC staff will be called upon to provide leadership in the implementation. They will be expected to know existing systems, data processing technology, micro and minicomputers and telecommunications. They will also be expected to have personal relation skills and the ability to communicate technical concepts to new computer users. These are high expectations.

Position classification in data processing activities is controversial. The Grace commission claimed inadequate pay for data processing people is a principal reason for Government's lagging behind the private sector in technical innovation. The Office of Personnel Management is concerned about overgrading some technical employees.

Managing change to use modern methods and technology should be a high priority. We need compensation and motivation for employees chosen to play a key role bringing about the new USDA. NFC employees are in this group.

Section 601 of the Civil Service Reform Act of 1978 authorizes demonstration projects. They can cover almost any facet of personnel management, including incentive compensation, discipline, recruiting, classification, and so on. The statute says an approved project "shall not be limited by any lack of specific authority under this title to take the action contemplated." Getting approval is a difficult and time-consuming effort requiring a lot of planning, specificity, and documentation as well as publication of project plans for public comment. However, flexibility to change existing processes is available in planning and after approval.

The Navy Demonstration Project at China Lake is a very successful example of relaxed classification requirements. This should be carefully analyzed as part of the process of developing a project for the National Finance Center.

The Architecture

The proposed architecture for future administrative systems within the USDA is one of COOPERATIVE PROCESSING. The Department has a centralized processing facility (the National Finance Center [NFC]) for common administrative systems. It also has a nationwide communication facility for the electronic transmission of data. The agencies are rapidly acquiring their own computing capabilities. These are ingredients of COOPERATIVE PROCESSING.

The architectural concept is simple. Continue to use the central facility, the NFC, for all common processes, such as payroll, payments, and the like. Appropriately improve these processes to take advantage of the other features of COOPERATIVE PROCESSING. Use the new communication capability to eliminate the inefficiencies of the current batch processes, especially in the areas of speed, accuracy and responsiveness. Have the agencies use their computing capabilities to capture and correct data at the source, store some of it locally for agency use, and electronically send the required common elements to the NFC for processing. That is essentially the architecture. COOPERATIVE PROCESSING is nothing more than a recognition that there are four major functions to be performed—accurate capturing of data, transmission, common processing, and reporting. These can be accomplished most efficiently and effectively by using the most suitable resources. The Department has, or will shortly have, these resources. What remains is putting it together so that each component cooperatively performs its function and collectively improves the overall process.

The folowing describes in somewhat more detail the ingredients and functions of the components of the COOPERATIVE PROCESSING architecture. The proposed architecture will consist of:

— A centralized processing facility (the NFC) to design, maintain, and operate computer systems for all common administrative processes within the Department. The central facility will provide the service in a variety of ways depending on the capabilities, requirements, and needs of the individual agency. It will also provide those support functions necessary for the successful operation of the systems. Additionally, it will act as the official repository for Departmental information and as the source of Departmental and central agency reports.

— Agency computing facilities having the capability to capture administrative data in an electronic medium and to transmit it to the central facility for processing. Depending on the capabilities in the agency, the following may also be performed:

-   intelligent pre-processing (editing) of captured data to reduce the error rate at the NFC.

-   storage of data for management situations unique to the agency or unit.

-   data manipulation and report production services in support of the management operations.

For the last two points, it's possible that these functions may be performed at a site remote from the point where the data were originally collected. This would be determined by the equipment mix of the agency and the networking structure, if any, that it developed. In any event, however, if the agency has computers, it should rely on them for its unique management information.

— A communication network (DEPNET) to allow for the interchange of data and information between the central facility and Department and agency designated points. Agencies may develop local area networks or subsets of DEPNET to support communication needs within the agency's own structure, but the backbone network for administrative systems is DEPNET. DEPNET will also provide communication capabilities between agencies; although in the administratrative area, the need is not great.

In addition to these basic elements of the architecture, another may be considered from either a Departmental or agency viewpoint. The Departmental computer centers (DCCs) could be used as concentration points for data transmission or as backup processors, if temporary additional capacity were needed. Using them as concentrators would be fairly simple to accomplish; having them function as auxiliary processors is a very complex undertaking. Since neither is necessary to accomplish the architecture, this approach can be considered in the future.

Core Data and Information Elements

A primary objective of the Reform 1 effort was the development of a preliminary set of core data and information elements necessary to meet the information needs of the Department and the reporting requirements of central guidance agencies. In addition, by developing such a list, the teams accomplished a first step designed to satisfy another identified requirement, that of establishing a Departmental data dictionary. Reform 1 identified the data dictionary efforts as being

essential since it would provide the standardization necessary for effective data communication between elements within the agencies and the Department.

By interviewing users and examining input documents and output reports, the teams identified over 3,400 information items that appeared to be essential for internal Department management or external reporting. The specific breakdown of this figure is:

- Administrative Services   433 items

- Financial Systems   1,576 items

- Personnel Systems   1,463 items

The items identified do not represent a new approach to data collection. For the most part, they are data that are currently collected through various systems, most of which are automated at the NFC. Essentially then, the listings are a catalogue of known requirements and form the basis for the development of a formal data dictionary for the Department.

AT least three additional activities must be performed before the items can be considered a data dictionary. First, the listings must be reviewed in their entirety to eliminate duplication. The initial formulation of the lists was performed separately by each team and it is safe to assume that there is duplication. Second, an effort must be undertaken to distinguish true individual data items from those which are composites of data items. Finally, once the first two activities are completed, the results will be reviewed by staff and agency personnel to re-validate the accuracy and completeness of the core data and information elements. While it is recognized that the listing will never be a static document, it is the essential starting point from which to work.